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JUL 27 2001

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SEQUENCE LISTING

<110> Cohen, C.  
Sampath, K.

<120> TREATMENT OF MAMMALIAN MYOCARDIUM WITH MORPHOGEN LOCALLY,  
OR WITH MORPHOGENICALLY-TREATED MYOGENIC PRECURSOR CELLS

<130> CIBT-P01-519

<140> 09/331,375

<141> 1999-12-03

<150> PCT/US/97/23611

<151> 1997-12-19

<150> 60/033,145

<151> 1996-12-20

<160> 31

<170> PatentIn Ver. 2.1

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 Ile Xaa Gln Xaa Leu Val His Xaa Xaa Xaa Pro Xaa Xaa Val Pro Lys  
 50 55 60  
 Xaa Cys Cys Ala Pro Thr Xaa Leu Xaa Ala Xaa Ser Val Leu Tyr Xaa  
 65 70 75 80  
 Asp Xaa Ser Xaa Asn Val Xaa Leu Xaa Lys Xaa Arg Asn Met Val Val  
 85 90 95  
 Xaa Ala Cys Gly Cys His  
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<210> 4  
 <211> 153  
 <212> PRT  
 <213> Homo sapiens

<400> 4  
 Thr Pro Phe Phe Arg Met Ser Thr Gly Ser Lys Gln Arg Ser Gln Asn  
 1 5 10 15  
 Arg Ser Lys Thr Pro Lys Asn Gln Glu Ala Leu Arg Met Ala Asn Val  
 20 25 30  
 Ala Glu Asn Ser Ser Ser Asp Gln Arg Gln Ala Cys Lys Lys His Glu  
 35 40 45  
 Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala  
 50 55 60  
 Pro Glu Gly Tyr Ala Ala Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro  
 65 70 75 80  
 Leu Asn Ser Tyr Met Asn Ala Thr Asn His Ala Ile Val Gln Thr Leu  
 85 90 95  
 Val His Phe Ile Asn Pro Glu Thr Val Pro Lys Pro Cys Cys Ala Pro  
 100 105 110  
 Thr Gln Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp Asp Ser Ser Asn  
 115 120 125  
 Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val Arg Ala Cys Gly Cys  
 130 135 140  
 His Asx Thr Thr Met Phe Phe Arg Met  
 145 150

<210> 5  
 <211> 139  
 <212> PRT  
 <213> Muridae

<400> 5

Ser Thr Gly Gly Lys Gln Arg Ser Gln Asn Arg Ser Lys Thr Pro Lys  
1 5 10 15

Asn Gln Glu Ala Leu Arg Met Ala Ser Val Ala Glu Asn Ser Ser Ser  
20 25 30

Asp Gln Arg Gln Ala Cys Lys Lys His Glu Leu Tyr Val Ser Phe Arg  
35 40 45

Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala Ala  
50 55 60

Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro Leu Asn Ser Tyr Met Asn  
65 70 75 80

Ala Thr Asn His Ala Ile Val Gln Thr Leu Val His Phe Ile Asn Pro  
85 90 95

Asp Thr Val Pro Lys Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala Ile  
100 105 110

Ser Val Leu Tyr Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr  
115 120 125

Arg Asn Met Val Val Arg Ala Cys Gly Cys His  
130 135

<210> 6

<211> 139

<212> PRT

<213> Homo sapiens

<400> 6

Ala Val Arg Pro Leu Arg Arg Arg Gln Pro Lys Lys Ser Asn Glu Leu  
1 5 10 15

Pro Gln Ala Asn Arg Leu Pro Gly Ile Phe Asp Asp Val His Gly Ser  
20 25 30

His Gly Arg Gln Val Cys Arg Arg His Glu Leu Tyr Val Ser Phe Gln  
35 40 45

Asp Leu Gly Trp Leu Asp Trp Val Ile Ala Pro Gln Gly Tyr Ser Ala  
50 55 60

Tyr Tyr Cys Glu Gly Glu Cys Ser Phe Pro Leu Asp Ser Cys Met Asn  
65 70 75 80

Ala Thr Asn His Ala Ile Leu Gln Ser Leu Val His Leu Met Lys Pro  
85 90 95

Asn Ala Val Pro Lys Ala Cys Cys Ala Pro Thr Lys Leu Ser Ala Thr  
100 105 110

Ser Val Leu Tyr Tyr Asp Ser Ser Asn Asn Val Ile Leu Arg Lys His  
 115 120 125

Arg Asn Met Val Val Lys Ala Cys Gly Cys His  
 130 135

<210> 7  
 <211> 139  
 <212> PPT  
 <213> Muridae

<400> 7  
 Ala Ala Arg Pro Leu Lys Arg Arg Gln Pro Lys Lys Thr Asn Glu Leu  
 1 5 10 15

Pro His Pro Asn Lys Leu Pro Gly Ile Phe Asp Asp Gly His Gly Ser  
 20 25 30

Arg Gly Arg Glu Val Cys Arg Arg His Glu Leu Tyr Val Ser Phe Arg  
 35 40 45

Asp Leu Gly Trp Leu Asp Trp Val Ile Ala Pro Gln Gly Tyr Ser Ala  
 50 55 60

Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro Leu Asp Ser Cys Met Asn  
 65 70 75 80

Ala Thr Asn His Ala Ile Leu Gln Ser Leu Val His Leu Met Lys Pro  
 85 90 95

Asp Val Val Pro Lys Ala Cys Cys Ala Pro Thr Lys Leu Ser Ala Thr  
 100 105 110

Ser Val Leu Tyr Tyr Asp Ser Ser Asn Asn Val Ile Leu Arg Lys His  
 115 120 125

Arg Asn Met Val Val Lys Ala Cys Gly Cys His  
 130 135

<210> 8  
 <211> 101  
 <212> PPT  
 <213> Bovinae

<400> 8  
 Cys Lys Arg His Pro Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn  
 1 5 10 15

Asp Trp Ile Val Ala Pro Pro Gly Tyr His Ala Phe Tyr Cys His Gly  
 20 25 30

Glu Cys Pro Phe Pro Leu Ala Asp His Leu Asn Ser Thr Asn His Ala  
 35 40 45

Ile Val Gln Thr Leu Val Asn Ser Val Asn Ser Lys Ile Pro Lys Ala  
50 55 60

Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp  
65 70 75 80

Glu Asn Glu Lys Val Val Leu Lys Asn Tyr Gln Asp Met Val Val Glu  
85 90 95

Gly Cys Gly Cys Arg  
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<210> 9  
<211> 101  
<212> PRT  
<213> Homo sapiens

<400> 9  
Cys Arg Arg His Ser Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn  
1 5 10 15

Asp Trp Ile Val Ala Pro Pro Gly Tyr Gln Ala Phe Tyr Cys His Gly  
20 25 30

Asp Cys Pro Phe Pro Leu Ala Asp His Leu Asn Ser Thr Asn His Ala  
35 40 45

Ile Val Gln Thr Leu Val Asn Ser Val Asn Ser Ser Ile Pro Lys Ala  
50 55 60

Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp  
65 70 75 80

Glu Tyr Asp Lys Val Val Leu Lys Asn Tyr Gln Glu Met Val Val Glu  
85 90 95

Gly Cys Gly Cys Arg  
100

<210> 10  
<211> 102  
<212> PFT  
<213> Drosophila melanogaster

<400> 10  
Cys Arg Arg His Ser Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asp  
1 5 10 15

Asp Trp Ile Val Ala Pro Leu Gly Tyr Asp Ala Tyr Tyr Cys His Gly  
20 25 30

Lys Cys Pro Phe Pro Leu Ala Asp His Phe Asn Ser Thr Asn His Ala  
35 40 45

Val Val Gln Thr Leu Val Asn Asn Asn Asn Pro Gly Lys Val Pro Lys  
50 55 60  
Ala Cys Cys Val Pro Thr Gln Leu Asp Ser Val Ala Met Leu Tyr Leu  
65 70 75 80  
Asn Asp Gln Ser Thr Val Val Leu Lys Asn Tyr Gln Glu Met Thr Val  
85 90 95  
Val Gly Cys Gly Cys Arg  
100

<210> 11  
<211> 102  
<212> PRT  
<213> Xenopus sp.

<400> 11  
Cys Lys Lys Arg His Leu Tyr Val Glu Phe Lys Asp Val Gly Trp Gln  
1 5 10 15  
Asn Trp Val Ile Ala Pro Gln Gly Tyr Met Ala Asn Tyr Cys Tyr Gly  
20 25 30  
Glu Cys Pro Tyr Pro Leu Thr Glu Ile Leu Asn Gly Ser Asn His Ala  
35 40 45  
Ile Leu Gln Thr Leu Val His Ser Ile Glu Pro Glu Asp Ile Pro Leu  
50 55 60  
Pro Cys Cys Val Pro Thr Lys Met Ser Pro Ile Ser Met Leu Phe Tyr  
65 70 75 80  
Asp Asn Asn Asp Asn Val Val Leu Arg His Tyr Glu Asn Met Ala Val  
85 90 95  
Asp Glu Cys Gly Cys Arg  
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<210> 12  
<211> 102  
<212> PRT  
<213> Muridae

<400> 12  
Cys Lys Lys His Glu Leu Tyr Val Ser Phe Gln Asp Val Gly Trp Gln  
1 5 10 15  
Asp Trp Ile Ile Ala Pro Lys Gly Tyr Ala Ala Asn Tyr Cys Asp Gly  
20 25 30  
Glu Cys Ser Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His Ala  
35 40 45

Ile Val Gln Thr Leu Val His Val Met Asn Pro Glu Tyr Val Pro Lys  
50 55 60  
Pro Cys Cys Ala Pro Thr Lys Val Asn Ala Ile Ser Val Leu Tyr Phe  
65 70 75 80  
Asp Asp Asn Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val  
85 90 95  
Arg Ala Cys Gly Cys His  
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<210> 13  
<211> 106  
<212> PRT  
<213> Homo sapiens

<400> 13  
Cys Arg Ala Arg Arg Leu Tyr Val Ser Phe Arg Glu Val Gly Trp His  
1 5 10 15  
Arg Trp Val Ile Ala Pro Arg Gly Phe Leu Ala Asn Tyr Cys Gln Gly  
20 25 30  
Gln Cys Ala Leu Pro Val Ala Leu Ser Gly Ser Gly Gly Pro Pro Ala  
35 40 45  
Leu Asn His Ala Val Leu Arg Ala Leu Met His Ala Ala Ala Pro Gly  
50 55 60  
Ala Ala Asp Leu Pro Cys Cys Val Pro Ala Arg Leu Ser Pro Ile Ser  
65 70 75 80  
Val Leu Phe Phe Asp Asn Ser Asp Asn Val Val Leu Arg Gln Tyr Glu  
85 90 95  
Asp Met Val Val Asp Glu Cys Gly Cys Arg  
100 105

<210> 14  
<211> 5  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Generic  
sequence 8

<230>  
<231> SITE  
<232> (2)  
<233> Xaa=Lys, Arg, Ala, or Gln



<110>  
 <111> SITE  
 <112> (3)  
 <113> Xaa=Lys, Arg or Met

<120>  
 <121> SITE  
 <122> (4)  
 <123> Xaa=His, Arg or Gln

<130>  
 <131> SITE  
 <132> (5)  
 <133> Xaa=Glu, Ser, His, Gly, Arg, Pro, Thr, or Tyr

<400> 14  
 Cys Xaa Xaa Xaa Xaa  
 1 5

<110> 15  
 <111> 1822  
 <112> DNA  
 <113> Homo sapiens

<210>  
 <221> CDS  
 <222> (49)..(1341)

<400> 15  
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 Met His Val  
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cgc tca ctg cga gct gcg gcg ccg cac agc ttc gtg gcg ctc tgg gca 105  
 Arg Ser Leu Arg Ala Ala Pro His Ser Phe Val Ala Leu Trp Ala  
 5 10 15

ccc ctg ttc ctg ctg cgc tcc gcc ctg gcc gac ttc agc ctg gac aac 153  
 Pro Leu Phe Leu Leu Arg Ser Ala Leu Ala Asp Phe Ser Leu Asp Asn  
 20 25 30 35

gag gtg cac tcg agc ttc atc cac cgg cgc ctc cgc agc cag gag cgg 201  
 Glu Val His Ser Ser Phe Ile His Arg Arg Leu Arg Ser Gln Glu Arg  
 40 45 50

cgg gag atg cag cgc gag atc ctc tcc att ttg ggc ttg ccc cac cgc 249  
 Arg Glu Met Gln Arg Glu Ile Leu Ser Ile Leu Gly Leu Pro His Arg  
 55 60 65

ccg cgc ccg cac ctc cag ggc aag cac aac tcg gca ccc atg ttc atg 297  
 Pro Arg Pro His Leu Gln Gly Lys His Asn Ser Ala Pro Met Phe Met  
 70 75 80

ctg gac ctg tac aac gcc atg gcg gtg gag gag gcc gcc ggg ccc gcc	345
Leu Asp Leu Tyr Asn Ala Met Ala Val Glu Glu Gly Gly Gly Pro Gly	
85 90 95	
ggc cag gcc ttc tcc tac ccc tac aag gcc gtc ttc agt acc cag gcc	393
Gly Gln Gly Phe Ser Tyr Pro Tyr Lys Ala Val Phe Ser Thr Gln Gly	
100 105 110 115	
ccc cct ctg gcc agc ctg caa gat agc cat ttc ctc acc gac gcc gac	441
Pro Pro Leu Ala Ser Leu Gln Asp Ser His Phe Leu Thr Asp Ala Asp	
120 125 130	
atg gtc atg agc ttc gtc aac ctc gtg gaa cat gac aag gaa ttc ttc	489
Met Val Met Ser Phe Val Asn Leu Val Glu His Asp Lys Glu Phe Phe	
135 140 145	
cac cca cgc tac cac cat cga gag ttc cgg ttt gat ctt tcc aag atc	537
His Pro Arg Tyr His His Arg Glu Phe Arg Phe Asp Leu Ser Lys Ile	
150 155 160	
cca gaa ggg gaa gct gtc acg gca gcc gaa ttc cgg atc tac aag gac	585
Pro Glu Gly Glu Ala Val Thr Ala Ala Glu Phe Arg Ile Tyr Lys Asp	
165 170 175	
tac atc cgg gaa cgc ttc gac aat gag acg ttc cgg atc agc gtt tat	633
Tyr Ile Arg Glu Arg Phe Asp Asn Glu Thr Phe Arg Ile Ser Val Tyr	
180 185 190 195	
cag gtg ctc cag gag cac ttg gcc agg gaa tcg gat ctc ttc ctg ctc	681
Gln Val Leu Gln Glu His Leu Gly Arg Glu Ser Asp Leu Phe Leu Leu	
200 205 210	
gac agc cgt acc ctc tgg gcc tcg gag gag gcc tgg ctg gtg ttt gac	729
Asp Ser Arg Thr Leu Trp Ala Ser Glu Glu Gly Trp Leu Val Phe Asp	
215 220 225	
atc aca gcc acc agc aac cac tgg gtg gtc aat ccg cgg cac aac ctg	777
Ile Thr Ala Thr Ser Asn His Trp Val Val Asn Pro Arg His Asn Leu	
230 235 240	
ggc ctg cag ctc tcg gtg gag acg ctg gat ggg cag agc atc aac ccc	825
Gly Leu Gln Leu Ser Val Glu Thr Leu Asp Gly Gln Ser Ile Asn Pro	
245 250 255	
aag ttg gcg gcc ctg att ggg cgg cac ggg ccc cag aac aag cag ccc	873
Lys Leu Ala Gly Leu Ile Gly Arg His Gly Pro Gln Asn Lys Gln Pro	
260 265 270 275	
ttc atg gtg gct ttc ttc aag gcc acg gag gtc cac ttc cgc agc atc	921
Phe Met Val Ala Phe Phe Lys Ala Thr Glu Val His Phe Arg Ser Ile	
280 285 290	
cgg tcc acg ggg agc aaa cag cgc agc cag aac cgc tcc aag acg ccc	969
Arg Ser Thr Gly Ser Lys Gln Arg Ser Gln Asn Arg Ser Lys Thr Pro	
295 300 305	

aag aac cag gaa gcc ctg cgg atg gcc aac gtg gca gag aac agc agc 1017  
Lys Asn Gln Glu Ala Leu Arg Met Ala Asn Val Ala Glu Asn Ser Ser  
310 315 320

agc gac cag agg cag gcc tgt aag aag cac gag ctg tat gtc agc ttc 1065  
Ser Asp Gln Arg Gln Ala Cys Lys Lys His Glu Leu Tyr Val Ser Phe  
325 330 335

cga gac ctg ggc tgg cag gac tgg atc atc gcg cct gaa ggc tac gcc 1113  
Arg Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala  
340 345 350 355

gcc tac tac tgt gag ggg gag tgt gcc ttc cct ctg aac tcc tac atg 1161  
Ala Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro Leu Asn Ser Tyr Met  
360 365 370

aac gcc acc aac cac gcc atc gtg cag acg ctg gtc cac ttc atc aac 1209  
Asn Ala Thr Asn His Ala Ile Val Gln Thr Leu Val His Phe Ile Asn  
375 380 385

ccg gaa acg gtg ccc aag ccc tgc tgt gcg ccc acg cag ctc aat gcc 1257  
Pro Glu Thr Val Pro Lys Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala  
390 395 400

atc tcc gtc ctc tac ttc gat gac agc tcc aac gtc atc ctg aag aaa 1305  
Ile Ser Val Leu Tyr Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys  
405 410 415

tac aga aac atg gtg gtc cgg gcc tgt ggc tgc cac tagctcctcc 1351  
Tyr Arg Asn Met Val Val Arg Ala Cys Gly Cys His  
420 425 430

gagaattcag accctttggg gccaaagtttt tctggatcct ccattgctcg ccttggccag 1411

gaaccagcag accaaactgcc ttttgtgaga ccttccccctc cctatcccca actttaaaagg 1471

tgtgagagta ttaggaaaca tgagcagcat atggcttttg atcagttttt cagtggcagc 1531

atccaatgaa caagatccta caagctgtgc aggcaaaacc tagcaggaaa aaaaaacaac 1591

gcataaaagaa aaatggccgg gccaggtcac tggtctgggaa gtctcagcca tgcacggact 1651

cgtttccaga ggtaattatg agcgccctacc agccaggcca cccagccgtg ggaggaagg 1711

ggcgtggcaa ggggtgggca cattggtgtc tgtgcgaaag gaaaattgac ccggaagtcc 1771

ctgtaataaaa tgtcacaata aaacgaatga atgaaaaaaaa aaaaaaaaaa a 1822

<210> 16

<211> 431

<212> PRT

<213> Homo sapiens

<400> 16

Met	His	Val	Arg	Ser	Leu	Arg	Ala	Ala	Ala	Pro	His	Ser	Phe	Val	Ala
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Leu	Trp	Ala	Pro	Leu	Phe	Leu	Leu	Arg	Ser	Ala	Leu	Ala	Asp	Phe	Ser
			20					25					30		
Leu	Asp	Asn	Glu	Val	His	Ser	Ser	Phe	Ile	His	Arg	Arg	Leu	Arg	Ser
		35					40					45			
Gln	Glu	Arg	Arg	Glu	Met	Gln	Arg	Glu	Ile	Leu	Ser	Ile	Leu	Gly	Leu
	50					55					60				
Pro	His	Arg	Pro	Arg	Pro	His	Leu	Gln	Gly	Lys	His	Asn	Ser	Ala	Pro
	65					70				75					80
Met	Phe	Met	Leu	Asp	Leu	Tyr	Asn	Ala	Met	Ala	Val	Glu	Glu	Gly	Gly
				85					90					95	
Gly	Pro	Gly	Gly	Gln	Gly	Phe	Ser	Tyr	Pro	Tyr	Lys	Ala	Val	Phe	Ser
			100					105						110	
Thr	Gln	Gly	Pro	Pro	Leu	Ala	Ser	Leu	Gln	Asp	Ser	His	Phe	Leu	Thr
		115					120					125			
Asp	Ala	Asp	Met	Val	Met	Ser	Phe	Val	Asn	Leu	Val	Glu	His	Asp	Lys
		130				135					140				
Glu	Phe	Phe	His	Pro	Arg	Tyr	His	His	Arg	Glu	Phe	Arg	Phe	Asp	Leu
	145				150					155					160
Ser	Lys	Ile	Pro	Glu	Gly	Glu	Ala	Val	Thr	Ala	Ala	Glu	Phe	Arg	Ile
				165					170					175	
Tyr	Lys	Asp	Tyr	Ile	Arg	Glu	Arg	Phe	Asp	Asn	Glu	Thr	Phe	Arg	Ile
			180					185					190		
Ser	Val	Tyr	Gln	Val	Leu	Gln	Glu	His	Leu	Gly	Arg	Glu	Ser	Asp	Leu
		195				200						205			
Phe	Leu	Leu	Asp	Ser	Arg	Thr	Leu	Trp	Ala	Ser	Glu	Glu	Gly	Trp	Leu
	210					215					220				
Val	Phe	Asp	Ile	Thr	Ala	Thr	Ser	Asn	His	Trp	Val	Val	Asn	Pro	Arg
	225				230					235					240
His	Asn	Leu	Gly	Leu	Gln	Leu	Ser	Val	Glu	Thr	Leu	Asp	Gly	Gln	Ser
			245						250					255	
Ile	Asn	Pro	Lys	Leu	Ala	Gly	Leu	Ile	Gly	Arg	His	Gly	Pro	Gln	Asn
			260					265					270		
Lys	Gln	Pro	Phe	Met	Val	Ala	Phe	Phe	Lys	Ala	Thr	Glu	Val	His	Phe
		275					280					285			
Arg	Ser	Ile	Arg	Ser	Thr	Gly	Ser	Lys	Gln	Arg	Ser	Gln	Asn	Arg	Ser
	290					295					300				

Lys Thr Pro Lys Asn Gln Glu Ala Leu Arg Met Ala Asn Val Ala Glu  
 305 310 315 320  
 Asn Ser Ser Ser Asp Gln Arg Gln Ala Cys Lys Lys His Glu Leu Tyr  
 325 330 335  
 Val Ser Phe Arg Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala Pro Glu  
 340 345 350  
 Gly Tyr Ala Ala Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro Leu Asn  
 355 360 365  
 Ser Tyr Met Asn Ala Thr Asn His Ala Ile Val Gln Thr Leu Val His  
 370 375 380  
 Phe Ile Asn Pro Glu Thr Val Pro Lys Pro Cys Cys Ala Pro Thr Gln  
 385 390 395 400  
 Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp Asp Ser Ser Asn Val Ile  
 405 410 415  
 Leu Lys Lys Tyr Arg Asn Met Val Val Arg Ala Cys Gly Cys His  
 420 425 430

<210> 17  
 <211> 1873  
 <212> DNA  
 <213> Mus musculus

<220>  
 <221> CDS  
 <222> (104)..(1393)

<400> 17  
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 Met His Val Arg  
 1  
 tgg ctg cgc gct gcg gcg cca cac agc ttc gtg gcg ctc tgg gcg cct 163  
 Ser Leu Arg Ala Ala Ala Pro His Ser Phe Val Ala Leu Trp Ala Pro  
 5 10 15 20  
 ctg ttc ttg ctg cgc tcc gcc ctg gcc gat ttc agc ctg gac aac gag 211  
 Leu Phe Leu Leu Arg Ser Ala Leu Ala Asp Phe Ser Leu Asp Asn Glu  
 25 30 35  
 gtg cac tcc agc ttc atc cac cgg cgc ctc cgc agc cag gag cgg cgg 259  
 Val His Ser Ser Phe Ile His Arg Arg Leu Arg Ser Gln Glu Arg Arg  
 40 45 50

gag atg cag cgg gag atc ctg tcc atc tta ggg ttg ccc cat cgc ccg	307
Glu Met Gln Arg Glu Ile Leu Ser Ile Leu Gly Leu Pro His Arg Pro	
55 60 65	
ggc cgg cac ctc cag gga aag cat aat tgg gcg ccc atg ttc atg ttg	355
Arg Pro His Leu Gln Gly Lys His Asn Ser Ala Pro Met Phe Met Leu	
70 75 80	
gac ctg tac aac gcc atg gcg gtg gag gag agc ggg cgg gac gga cag	403
Asp Leu Tyr Asn Ala Met Ala Val Glu Glu Ser Gly Pro Asp Gly Gln	
85 90 95 100	
ggc ttc tcc tac ccc tac aag gcc gtc ttc agt acc cag ggc ccc cct	451
Gly Phe Ser Tyr Pro Tyr Lys Ala Val Phe Ser Thr Gln Gly Pro Pro	
105 110 115	
tta gcc agc ctg cag gac agc cac ttc ctc act gac gcc gac atg gtc	499
Leu Ala Ser Leu Gln Asp Ser His Phe Leu Thr Asp Ala Asp Met Val	
120 125 130	
atg agc ttc gtc aac cta gtg gaa cat gac aaa gaa ttc ttc cac cct	547
Met Ser Phe Val Asn Leu Val Glu His Asp Lys Glu Phe Phe His Pro	
135 140 145	
cga tac cac cat cgg gag ttc cgg ttt gat ctt tcc aag atc ccc gag	595
Arg Tyr His His Arg Glu Phe Arg Phe Asp Leu Ser Lys Ile Pro Glu	
150 155 160	
ggc gaa cgg gtg acc gca gcc gaa ttc agg atc tat aag gac tac atc	643
Gly Glu Arg Val Thr Ala Ala Glu Phe Arg Ile Tyr Lys Asp Tyr Ile	
165 170 175 180	
cgg gag cga ttt gac aac gag acc ttc cag atc aca gtc tat cag gtg	691
Arg Glu Arg Phe Asp Asn Glu Thr Phe Gln Ile Thr Val Tyr Gln Val	
185 190 195	
ctc cag gag cac tca ggc agg gag tgg gac ctc ttc ttg ctg gac agc	739
Leu Gln Glu His Ser Gly Arg Glu Ser Asp Leu Phe Leu Leu Asp Ser	
200 205 210	
ggc acc atc tgg gct tct gag gag gcc tgg ttg gtg ttt gat atc aca	787
Arg Thr Ile Trp Ala Ser Glu Glu Gly Trp Leu Val Phe Asp Ile Thr	
215 220 225	
gcc acc agc aac cac tgg gtg gtc aac cct cgg cac aac ctg ggc tta	835
Ala Thr Ser Asn His Trp Val Val Asn Pro Arg His Asn Leu Gly Leu	
230 235 240	
cag ctc tct gtg gag acc ctg gat ggg cag agc atc aac ccc aag ttg	883
Gln Leu Ser Val Glu Thr Leu Asp Gly Gln Ser Ile Asn Pro Lys Leu	
245 250 255 260	
gca gcc ctg att gga cgg cat gga ccc cag aac aag caa ccc ttc atg	931
Ala Gly Leu Ile Gly Arg His Gly Pro Gln Asn Lys Gln Pro Phe Met	
265 270 275	

gtg gcc ttc ttc aag gcc acg gaa gtc cat ctc cgt agt atc cgg tcc 979  
 Val Ala Phe Phe Lys Ala Thr Glu Val His Leu Arg Ser Ile Arg Ser 290  
 280 285

acg ggg ggc aag cag cgc agc cag aat cgc tcc aag acg cca aag aac 1027  
 Thr Gly Gly Lys Gln Arg Ser Gln Asn Arg Ser Lys Thr Pro Lys Asn 305  
 295 300

caa gag gcc ctg agg atg gcc agt gtg gca gaa aac agc agc agt gac 1075  
 Gln Glu Ala Leu Arg Met Ala Ser Val Ala Glu Asn Ser Ser Ser Asp 320  
 310 315

cag agg cag gcc tgc aag aaa cat gag ctg tac gtc agc ttc cga gac 1123  
 Gln Arg Gln Ala Cys Lys Lys His Glu Leu Tyr Val Ser Phe Arg Asp 340  
 325 330 335

ctt ggc tgg cag gac tgg atc att gca cct gaa ggc tat gct gcc tac 1171  
 Leu Gly Trp Gln Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala Ala Tyr 355  
 345 350

tac tgt gag gga gag tgc gcc ttc cct ctg aac tcc tac atg aac gcc 1219  
 Tyr Cys Glu Gly Glu Cys Ala Phe Pro Leu Asn Ser Tyr Met Asn Ala 370  
 360 365

acc aac cac gcc atc gtc cag aca ctg gtt cac ttc atc aac cca gac 1267  
 Thr Asn His Ala Ile Val Gln Thr Leu Val His Phe Ile Asn Pro Asp 385  
 375 380

aca gta ccc aag ccc tgc tgt gcg ccc acc cag ctc aac gcc atc tct 1315  
 Thr Val Pro Lys Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala Ile Ser 400  
 390 395

gtc ctc tac ttc gac gac agc tct aat gtc atc ctg aag aag tac aga 1363  
 Val Leu Tyr Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Arg 420  
 405 410 415

aac atg gtg gtc cgg gcc tgt ggc tgc cac tagctcttcc tgagaccctg 1413  
 Asn Met Val Val Arg Ala Cys Gly Cys His 430  
 425

acctttgcgg ggccacacct ttccaaatct tcgatgtctc accatctaag tctctcactg 1473  
 cccaccttgg cgaggagaac agaccaacct ctctgagcc ttccctcacc tcccaaccgg 1533  
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 aatcgcaagc ctggttcagc tgcagcagaa ggaagggtt agccagggtg ggcgctggcg 1773  
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<211> 430

<212> PRT

<213> Mus musculus

<400> 18

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35 40 45

Gln Glu Arg Arg Glu Met Gln Arg Glu Ile Leu Ser Ile Leu Gly Leu  
50 55 60

Pro His Arg Pro Arg Pro His Leu Gln Gly Lys His Asn Ser Ala Pro  
65 70 75 80

Met Phe Met Leu Asp Leu Tyr Asn Ala Met Ala Val Glu Glu Ser Gly  
85 90 95

Pro Asp Gly Gln Gly Phe Ser Tyr Pro Tyr Lys Ala Val Phe Ser Thr  
100 105 110

Gln Gly Pro Pro Leu Ala Ser Leu Gln Asp Ser His Phe Leu Thr Asp  
115 120 125

Ala Asp Met Val Met Ser Phe Val Asn Leu Val Glu His Asp Lys Glu  
130 135 140

Phe Phe His Pro Arg Tyr His His Arg Glu Phe Arg Phe Asp Leu Ser  
145 150 155 160

Lys Ile Pro Glu Gly Glu Arg Val Thr Ala Ala Glu Phe Arg Ile Tyr  
165 170 175

Lys Asp Tyr Ile Arg Glu Arg Phe Asp Asn Glu Thr Phe Gln Ile Thr  
180 185 190

Val Tyr Gln Val Leu Gln Glu His Ser Gly Arg Glu Ser Asp Leu Phe  
195 200 205

Leu Leu Asp Ser Arg Thr Ile Trp Ala Ser Glu Glu Gly Trp Leu Val  
210 215 220

Phe Asp Ile Thr Ala Thr Ser Asn His Trp Val Val Asn Pro Arg His  
225 230 235 240

Asn Leu Gly Leu Gln Leu Ser Val Glu Thr Leu Asp Gly Gln Ser Ile  
245 250 255



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aggccctggg tcggcgcgcgc agccgatgcg cgcgcgcgcgc gccgcgcgcgc tgagcgcgc 480

cgccctgcgc atg acc gcg ctc ccc gcc cgc ctc tgg ctc ctg gcc ctg gcg 531  
Met Thr Ala Leu Pro Gly Pro Leu Trp Leu Leu Gly Leu Ala  
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cta tgc gcg ctg gcc ggg gcc gcc ccc gcc ctg cga ccc ccc gcc 579  
Leu Cys Ala Leu Gly Gly Gly Pro Gly Leu Arg Pro Pro Gly  
15 20 25 30

tgt ccc cag cga cgt ctg gcc gcg cgc gag cgc cgg gac gtg cag cgc 627  
Cys Pro Gln Arg Arg Leu Gly Ala Arg Glu Arg Arg Asp Val Gln Arg  
35 40 45

gag atc ctg gcg gtg ctc gcc ctg cct ggg cgg ccc cgg ccc gcc gcg 675  
Glu Ile Leu Ala Val Leu Gly Leu Pro Gly Arg Pro Arg Pro Arg Ala  
50 55 60

cca ccc gcc gcc tcc cgg ctg ccc gcg tcc gcg cgc ctc ttc atg ctg 723  
Pro Pro Ala Ala Ser Arg Leu Pro Ala Ser Ala Pro Leu Phe Met Leu  
65 70 75

gac ctg tac cac gcc atg gcc gcc gac gac gag gac gcc gcg ccc 771  
Asp Leu Tyr His Ala Met Ala Gly Asp Asp Asp Glu Asp Gly Ala Pro  
80 85 90

gcg gag cgg cgc ctg gcc cgc gcc gac ctg gtc atg agc ttc gtt aac 819  
Ala Glu Arg Arg Leu Gly Arg Ala Asp Leu Val Met Ser Phe Val Asn  
95 100 105 110

atg gtg gag cga gac cgt gcc ctg gcc cac gag gag ccc cat tgg aag 867  
Met Val Glu Arg Asp Arg Ala Leu Gly His Gln Glu Pro His Trp Lys  
115 120 125

gag ttc cgc ttt gac ctg acc cag atc cgc gct ggg gag gcg gtc aca 915  
Glu Phe Arg Phe Asp Leu Thr Gln Ile Pro Ala Gly Glu Ala Val Thr  
130 135 140

gct gcg gag ttc cgc att tac aag gtg ccc agc atc cac ctg ctc aac 963  
Ala Ala Glu Phe Arg Ile Tyr Lys Val Pro Ser Ile His Leu Leu Asn  
145 150 155

agg acc ctc cac gtc agc atg ttc cag gtg gtc gag gag cag tcc aac 1011  
Arg Thr Leu His Val Ser Met Phe Gln Val Val Gln Glu Gln Ser Asn  
160 165 170

agg gag tct gac ttg ttc ttt ttg gat ctt cag acg ctc cga gct gga 1059  
Arg Glu Ser Asp Leu Phe Phe Leu Asp Leu Gln Thr Leu Arg Ala Gly  
175 180 185 190

Asn Pro Lys Leu Ala Gly Leu Ile Gly Arg His Gly Pro Gln Asn Lys 270  
Gln Pro Phe Met Val Ala Phe Phe Lys Ala Thr Glu Val His Leu Arg 285  
Ser Ile Arg Ser Thr Gly Gly Lys Gln Arg Ser Gln Asn Arg Ser Lys 300  
Thr Pro Lys Asn Gln Glu Ala Leu Arg Met Ala Ser Val Ala Glu Asn 320  
Ser Ser Ser Asp Gln Arg Gln Ala Cys Lys Lys His Glu Leu Tyr Val 335  
Ser Phe Arg Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala Pro Glu Gly 350  
Tyr Ala Ala Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro Leu Asn Ser 365  
Tyr Met Asn Ala Thr Asn His Ala Ile Val Gln Thr Leu Val His Phe 380  
Ile Asn Pro Asp Thr Val Pro Lys Pro Cys Cys Ala Pro Thr Gln Leu 400  
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Lys Lys Tyr Arg Asn Met Val Val Arg Ala Cys Gly Cys His 430

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<213> Homo sapiens

<220>  
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<222> (490)..(1695)

<400> 19

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ggcgcgcgcgc ggcgcgcgcgc ggcgcgcgcgc ggcgcgcgcgc ggcgcgcgcgc ggcgcgcgcgc 240

ggcgcgcgcgc ggcgcgcgcgc ggcgcgcgcgc ggcgcgcgcgc ggcgcgcgcgc ggcgcgcgcgc 300

ggcgcgcgcgc ggcgcgcgcgc ggcgcgcgcgc ggcgcgcgcgc ggcgcgcgcgc ggcgcgcgcgc 360

gac gag ggc tgg ctg gtg ctg gat gtc aca gca gcc agt gac tgc tgg	1107
Asp Glu Gly Trp Leu Val Leu Asp Val Thr Ala Ala Ser Asp Cys Trp	
195 200 205	
ttg ctg aag cgt cac aag gac ctg gga ctc cgc ctc tat gtg gag act	1155
Leu Leu Lys Arg His Lys Asp Leu Gly Leu Arg Leu Tyr Val Glu Thr	
210 215 220	
gag gac ggg cac agc gtg gat cct ggc ctg gcc ggc ctg ctg ggt caa	1203
Glu Asp Gly His Ser Val Asp Pro Gly Leu Ala Gly Leu Leu Gly Gln	
225 230 235	
ggg gcc cca cgc tcc caa cag cct ttc gtg gtc act ttc ttc agg gcc	1251
Arg Ala Pro Arg Ser Gln Gln Pro Phe Val Val Thr Phe Phe Arg Ala	
240 245 250	
agt cgg agt ccc atc cgc acc cct cgg gca gtg agg cca ctg agg agg	1299
Ser Pro Ser Pro Ile Arg Thr Pro Arg Ala Val Arg Pro Leu Arg Arg	
255 260 265 270	
agg cag cgg aag aaa agc aac gag ctg cgg cag gcc aac cga ctc cca	1347
Arg Gln Pro Lys Lys Ser Asn Glu Leu Pro Gln Ala Asn Arg Leu Pro	
275 280 285	
ggg atc ttt gat gac gtc cac ggc tcc cac ggc cgg cag gtc tgc cgt	1395
Gly Ile Phe Asp Asp Val His Gly Ser His Gly Arg Gln Val Cys Arg	
290 295 300	
cgg cac gag ctc tac gtc agc ttc cag gac ctc ggc tgg ctg gac tgg	1443
Arg His Glu Leu Tyr Val Ser Phe Gln Asp Leu Gly Trp Leu Asp Trp	
305 310 315	
gtc atc gct ccc caa ggc tac tcg gcc tat tac tgt gag ggg gag tgc	1491
Val Ile Ala Pro Gln Gly Tyr Ser Ala Tyr Tyr Cys Glu Gly Glu Cys	
320 325 330	
tcc ttc cca ctg gac tcc tgc atg aat gcc acc aac cac gcc atc ctg	1539
Ser Phe Pro Leu Asp Ser Cys Met Asn Ala Thr Asn His Ala Ile Leu	
335 340 345 350	
cag tcc ctg gtg cac ctg atg aag cca aac gca gtc ccc aag gcg tgc	1587
Gln Ser Leu Val His Leu Met Lys Pro Asn Ala Val Pro Lys Ala Cys	
355 360 365	
tgt gca ccc acc aag ctg agc gcc acc tct gtg ctc tac tat gac agc	1635
Cys Ala Pro Thr Lys Leu Ser Ala Thr Ser Val Leu Tyr Tyr Asp Ser	
370 375 380	
agc aac aac gtc atc ctg cgc aag cac cgc aac atg gtg gtc aag gcc	1683
Ser Asn Asn Val Ile Leu Arg Lys His Arg Asn Met Val Val Lys Ala	
385 390 395	
tgc ggc tgc cac tgagtcagcc cgcccagccc tactgcag	1723
Cys Gly Cys His	
400	

0210: 20  
 0211: 402  
 0212: PRT  
 0213: Homo sapiens

0400: 20

Met	Thr	Ala	Leu	Pro	Gly	Pro	Leu	Trp	Leu	Leu	Gly	Leu	Ala	Leu	Cys
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Ala	Leu	Gly	Gly	Gly	Gly	Pro	Gly	Leu	Arg	Pro	Pro	Pro	Gly	Cys	Pro
		20						25					30		
Gln	Arg	Arg	Leu	Gly	Ala	Arg	Glu	Arg	Arg	Asp	Val	Gln	Arg	Glu	Ile
	35						40					45			
Leu	Ala	Val	Leu	Gly	Leu	Pro	Gly	Arg	Pro	Arg	Pro	Arg	Ala	Pro	Pro
	50					55					60				
Ala	Ala	Ser	Arg	Leu	Pro	Ala	Ser	Ala	Pro	Leu	Phe	Met	Leu	Asp	Leu
	65				70					75					80
Tyr	His	Ala	Met	Ala	Gly	Asp	Asp	Asp	Glu	Asp	Gly	Ala	Pro	Ala	Glu
			85						90					95	
Arg	Arg	Leu	Gly	Arg	Ala	Asp	Leu	Val	Met	Ser	Phe	Val	Asn	Met	Val
		100					105						110		
Glu	Arg	Asp	Arg	Ala	Leu	Gly	His	Gln	Glu	Pro	His	Trp	Lys	Glu	Phe
	115						120					125			
Arg	Phe	Asp	Leu	Thr	Gln	Ile	Pro	Ala	Gly	Glu	Ala	Val	Thr	Ala	Ala
	130					135					140				
Glu	Phe	Arg	Ile	Tyr	Lys	Val	Pro	Ser	Ile	His	Leu	Leu	Asn	Arg	Thr
	145				150					155					160
Leu	His	Val	Ser	Met	Phe	Gln	Val	Val	Gln	Glu	Gln	Ser	Asn	Arg	Glu
			165						170					175	
Ser	Asp	Leu	Phe	Phe	Leu	Asp	Leu	Gln	Thr	Leu	Arg	Ala	Gly	Asp	Glu
		180						185					190		
Gly	Trp	Leu	Val	Leu	Asp	Val	Thr	Ala	Ala	Ser	Asp	Cys	Trp	Leu	Leu
	195						200					205			
Lys	Arg	His	Lys	Asp	Leu	Gly	Leu	Arg	Leu	Tyr	Val	Glu	Thr	Glu	Asp
	210					215					220				
Gly	His	Ser	Val	Asp	Pro	Gly	Leu	Ala	Gly	Leu	Leu	Gly	Gln	Arg	Ala
	225				230					235					240
Pro	Arg	Ser	Gln	Gln	Pro	Phe	Val	Val	Thr	Phe	Phe	Arg	Ala	Ser	Pro
			245						250					255	

Ser Pro Ile Arg Thr Pro Arg Ala Val Arg Pro Leu Arg Arg Arg Gln  
 260 265 270  
 Pro Lys Lys Ser Asn Glu Leu Pro Gln Ala Asn Arg Leu Pro Gly Ile  
 275 280 285  
 Phe Asp Asp Val His Gly Ser His Gly Arg Gln Val Cys Arg Arg His  
 290 295 300  
 Glu Leu Tyr Val Ser Phe Gln Asp Leu Gly Trp Leu Asp Trp Val Ile  
 305 310 315 320  
 Ala Pro Gln Gly Tyr Ser Ala Tyr Tyr Cys Glu Gly Glu Cys Ser Phe  
 325 330 335  
 Pro Leu Asp Ser Cys Met Asn Ala Thr Asn His Ala Ile Leu Gln Ser  
 340 345 350  
 Leu Val His Leu Met Lys Pro Asn Ala Val Pro Lys Ala Cys Cys Ala  
 355 360 365  
 Pro Thr Lys Leu Ser Ala Thr Ser Val Leu Tyr Tyr Asp Ser Ser Asn  
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 Cys His

<210> 21  
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<220>  
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 <222> (93)..(1289)

<400> 21  
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 Met Ala Met Arg Pro Gly Pro  
 1 5  
 ctg tgg cta ttg ggc ctt gct ctg tgc gcg ctg gga ggc ggc cac ggt 161  
 Leu Trp Leu Leu Gly Leu Ala Leu Cys Ala Leu Gly Gly Gly His Gly  
 10 15 20  
 ccg cgt ccc ccg cac acc tgt ccc cag cgt cgc ctg gga gcg cgc gag 209  
 Pro Arg Pro Pro His Thr Cys Pro Gln Arg Arg Leu Gly Ala Arg Glu  
 25 30 35

cgc cgc gac atg cag cgt gaa atc ctg gcg gtg ctc ggg cta ccg gga	257
Arg Arg Asp Met Gln Arg Glu Ile Leu Ala Val Leu Gly Leu Pro Gly	
40 45 50 55	
cgg ccc cga ccc cgt gca caa ccc gcc gct gcc cgg cag cca gcg tcc	305
Arg Pro Arg Pro Arg Ala Gln Pro Ala Ala Ala Arg Gln Pro Ala Ser	
60 65 70	
ggg ccc ctc ttc atg ttg gac cta tac cac gcc atg acc gat gac gac	353
Ala Pro Leu Phe Met Leu Asp Leu Tyr His Ala Met Thr Asp Asp Asp	
75 80 85	
gac gcc ggg cca cca cag gct cac tta gcc cgt gcc gac ctg gtc atg	401
Asp Gly Gly Pro Pro Gln Ala His Leu Gly Arg Ala Asp Leu Val Met	
90 95 100	
agc ttc gtc aac atg gtg gaa cgc gac cgt acc ctg ggc tac cag gag	449
Ser Phe Val Asn Met Val Glu Arg Asp Arg Thr Leu Gly Tyr Gln Glu	
105 110 115	
cca cac tgg aag gaa ttc cac ttt gac cta acc cag atc cct gct ggg	497
Pro His Trp Lys Glu Phe His Phe Asp Leu Thr Gln Ile Pro Ala Gly	
120 125 130 135	
gag gct gtc aca gct gct gag ttc cgg atc tac aaa gaa ccc agc acc	545
Glu Ala Val Thr Ala Ala Glu Phe Arg Ile Tyr Lys Glu Pro Ser Thr	
140 145 150	
cac ccg ctc aac aca acc ctc cac atc agc atg ttc gaa gtg gtc caa	593
His Pro Leu Asn Thr Thr Leu His Ile Ser Met Phe Glu Val Val Gln	
155 160 165	
gag cac tcc aac agg gag tct gac ttg ttc ttt ttg gat ctt cag acg	641
Glu His Ser Asn Arg Glu Ser Asp Leu Phe Phe Leu Asp Leu Gln Thr	
170 175 180	
ctc cga tct ggg gac gag gcc tgg ctg gtg ctg gac atc aca gca gcc	689
Leu Arg Ser Gly Asp Glu Gly Trp Leu Val Leu Asp Ile Thr Ala Ala	
185 190 195	
agt gac cga tgg ctg ctg aac cat cac aag gac ctg gga ctc cgc ctc	737
Ser Asp Arg Trp Leu Leu Asn His His Lys Asp Leu Gly Leu Arg Leu	
200 205 210 215	
tat gtg gaa acc gcg gat ggg cac agc atg gat cct gcc ctg gct ggt	785
Tyr Val Glu Thr Ala Asp Gly His Ser Met Asp Pro Gly Leu Ala Gly	
220 225 230	
ctg ctt gga cga caa gca cca cgc tcc aga cag cct ttc atg gta acc	833
Leu Leu Gly Arg Gln Ala Pro Arg Ser Arg Gln Pro Phe Met Val Thr	
235 240 245	
ttc ttc agg gcc agc cag agt cct gtg cgg gcc cct cgg gca gcg aga	881
Phe Phe Arg Ala Ser Gln Ser Pro Val Arg Ala Pro Arg Ala Arg	
250 255 260	

cca ctg aag agg agg cag cca aag aaa acg aac gag ctt ccg cac ccc	929
Pro Leu Lys Arg Arg Gln Pro Lys Lys Thr Asn Glu Leu Pro His Pro	
265 270 275	
aac aaa ctc cca ggg atc ttt gat gat ggc cac ggt tcc cgc ggc aga	977
Asn Lys Leu Pro Gly Ile Phe Asp Asp Gly His Gly Ser Arg Gly Arg	
280 285 290 295	
gag gtt tgc cgc agg cat gag ctc tac gtc agc ttc cgt gac ctt ggc	1015
Glu Val Cys Arg Arg His Glu Leu Tyr Val Ser Phe Arg Asp Leu Gly	
300 305 310	
tgg ctg gac tgg gtc atc gcc ccc cag ggc tac tct gcc tat tac tgt	1073
Trp Leu Asp Trp Val Ile Ala Pro Gln Gly Tyr Ser Ala Tyr Tyr Cys	
315 320 325	
gag ggg gag tgt gct ttc cca ctg gac tcc tgt atg aac gcc acc aac	1111
Glu Gly Glu Cys Ala Phe Pro Leu Asp Ser Cys Met Asn Ala Thr Asn	
330 335 340	
cat gcc atc ttg cag tct ctg gtg cac ctg atg aag cca gat gtt gtc	1159
His Ala Ile Leu Gln Ser Leu Val His Leu Met Lys Pro Asp Val Val	
345 350 355	
ccc aag gca tgc tgt gca ccc acc aaa ctg agt gcc acc tct gtg ctg	1217
Pro Lys Ala Cys Cys Ala Pro Thr Lys Leu Ser Ala Thr Ser Val Leu	
360 365 370 375	
tac tat gac agc agc aac aat gtc atc ctg cgt aaa cac cgt aac atg	1265
Tyr Tyr Asp Ser Ser Asn Asn Val Ile Leu Arg Lys His Arg Asn Met	
380 385 390	
gtg gtc aag gcc tgt ggc tgc cac tgaggccccg cccagcatcc tgcttctact	1319
Val Val Lys Ala Cys Gly Cys His	
395	
accttaccat ctggccgggc ccctctccag aggcagaaac ccttctatgt tatcatagct	1379
cagacagggg caatgggagg cccttcaactt cccctggcca cttcctgcta aaattctggg	1439
ctttcccagt tctctgttcc ttcatgggggt ttgggggcta tcaccccgcc ctctccatcc	1499
tcctacccca agcatagact gaatgcacac agcatcccag agctatgcta actgagaggt	1559
ctgggggtcag cactgaaggc ccacatgagg aagactgata cttggccatc ctgagccac	1619
aatggcaaat tctggatggt ctaagaaggc cctggaattc taaactagat gatctgggct	1679
ctctgcacca ttcatgttg cagttgggac attttttaggt ataacagaca catacactta	1739
gatcaatgca tcgctgtact ccttgaaatc agagctagct tgttagaaaa agaatacagag	1799
ccaggtatag cgggtgcatgt cattaatccc agcgctaaag agacagagac aggagaatct	1859
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0210: 22  
 0211: 399  
 0212: PRT  
 0213: Mus musculus

0400: 22

Met	Ala	Met	Arg	Pro	Gly	Pro	Leu	Trp	Leu	Leu	Gly	Leu	Ala	Leu	Cys
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Ala	Leu	Gly	Gly	Gly	His	Gly	Pro	Arg	Pro	Pro	His	Thr	Cys	Pro	Gln
		20						25					30		
Arg	Arg	Leu	Gly	Ala	Arg	Glu	Arg	Arg	Asp	Met	Gln	Arg	Glu	Ile	Leu
		35					40					45			
Ala	Val	Leu	Gly	Leu	Pro	Gly	Arg	Pro	Arg	Pro	Arg	Ala	Gln	Pro	Ala
	50					55					60				
Ala	Ala	Arg	Gln	Pro	Ala	Ser	Ala	Pro	Leu	Phe	Met	Leu	Asp	Leu	Tyr
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His	Ala	Met	Thr	Asp	Asp	Asp	Asp	Gly	Gly	Pro	Pro	Gln	Ala	His	Leu
				85					90					95	
Gly	Arg	Ala	Asp	Leu	Val	Met	Ser	Phe	Val	Asn	Met	Val	Glu	Arg	Asp
			100					105					110		
Arg	Thr	Leu	Gly	Tyr	Gln	Glu	Pro	His	Trp	Lys	Glu	Phe	His	Phe	Asp
		115					120					125			
Leu	Thr	Gln	Ile	Pro	Ala	Gly	Glu	Ala	Val	Thr	Ala	Ala	Glu	Phe	Arg
		130				135					140				
Ile	Tyr	Lys	Glu	Pro	Ser	Thr	His	Pro	Leu	Asn	Thr	Thr	Leu	His	Ile
145					150					155					160
Ser	Met	Phe	Glu	Val	Val	Gln	Glu	His	Ser	Asn	Arg	Glu	Ser	Asp	Leu
			165						170					175	
Phe	Phe	Leu	Asp	Leu	Gln	Thr	Leu	Arg	Ser	Gly	Asp	Glu	Gly	Trp	Leu
			180					185					190		
Val	Leu	Asp	Ile	Thr	Ala	Ala	Ser	Asp	Arg	Trp	Leu	Leu	Asn	His	His
		195					200					205			
Lys	Asp	Leu	Gly	Leu	Arg	Leu	Tyr	Val	Glu	Thr	Ala	Asp	Gly	His	Ser
	210					215					220				
Met	Asp	Pro	Gly	Leu	Ala	Gly	Leu	Leu	Gly	Arg	Gln	Ala	Pro	Arg	Ser
225					230					235					240
Arg	Gln	Pro	Phe	Met	Val	Thr	Phe	Phe	Arg	Ala	Ser	Gln	Ser	Pro	Val
			245						250					255	

Arg Ala Pro Arg Ala Ala Arg Pro Leu Lys Arg Arg Gln Pro Lys Lys  
 260 265 270  
 Thr Asn Glu Leu Pro His Pro Asn Lys Leu Pro Gly Ile Phe Asp Asp  
 275 280 285  
 Gly His Gly Ser Arg Gly Arg Glu Val Cys Arg Arg His Glu Leu Tyr  
 290 295 300  
 Val Ser Phe Arg Asp Leu Gly Trp Leu Asp Trp Val Ile Ala Pro Gln  
 305 310 315 320  
 Gly Tyr Ser Ala Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro Leu Asp  
 325 330 335  
 Ser Cys Met Asn Ala Thr Asn His Ala Ile Leu Gln Ser Leu Val His  
 340 345 350  
 Leu Met Lys Pro Asp Val Val Pro Lys Ala Cys Cys Ala Pro Thr Lys  
 355 360 365  
 Leu Ser Ala Thr Ser Val Leu Tyr Tyr Asp Ser Ser Asn Asn Val Ile  
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 385 390 395

<210> 23  
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 <212> DNA  
 <213> Drosophila melanogaster

<220>  
 <221> CDS  
 <222> (1)..(1368)

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 ctg gga ctc gga atg gtt ctg ctc atg ttc gtg gcg acc acg ccg ccg 96  
 Leu Gly Leu Gly Met Val Leu Leu Met Phe Val Ala Thr Thr Pro Pro  
 20 25 30  
 gcc gtt gag gcc acc cag tcg ggg att tac ata gac aac ggc aag gac 144  
 Ala Val Glu Ala Thr Gln Ser Gly Ile Tyr Ile Asp Asn Gly Lys Asp  
 35 40 45  
 cag acg atc atg cac aga gtg ctg agc gag gac gac aag ctg gac gtc 192  
 Gln Thr Ile Met His Arg Val Leu Ser Glu Asp Asp Lys Leu Asp Val  
 50 55 60



tcg tac gag atc ctc gag ttc ctg ggc atc gcc gaa cgg ccg acg cac	240
Ser Tyr Glu Ile Leu Glu Phe Leu Gly Ile Ala Glu Arg Pro Thr His	
55 70 75 80	
ctg agc agc cac cag ttg tct ctg agg aag tct gct ccc aag ttc ctg	288
Leu Ser Ser His Gln Leu Ser Leu Arg Lys Ser Ala Pro Lys Phe Leu	
85 90 95	
ctg gac gtc tac cac cgc atc acg gcg gag gag ggt ctc agc gat cag	336
Leu Asp Val Tyr His Arg Ile Thr Ala Glu Glu Gly Leu Ser Asp Gln	
100 105 110	
gat gag gac gac gac tac gaa cgc ggc cat cgg tcc agg agg agc gcc	384
Asp Glu Asp Asp Asp Tyr Glu Arg Gly His Arg Ser Arg Arg Ser Ala	
115 120 125	
gac ctc gag gag gat gag ggc gag cag cag aag aac ttc atc acc gac	432
Asp Leu Glu Glu Asp Glu Gly Glu Gln Gln Lys Asn Phe Ile Thr Asp	
130 135 140	
ctg gac aag cgg gcc atc gac gag agc gac atc atc atg acc ttc ctg	480
Leu Asp Lys Arg Ala Ile Asp Glu Ser Asp Ile Ile Met Thr Phe Leu	
145 150 155 160	
aac aag cgc cac cac aat gtg gac gaa ctg cgt cac gag cac ggc cgt	528
Asn Lys Arg His His Asn Val Asp Glu Leu Arg His Glu His Gly Arg	
165 170 175	
cgc ctg tgg ttc gac gtc tcc aac gtg ccc aac gac aac tac ctg gtg	576
Arg Leu Trp Phe Asp Val Ser Asn Val Pro Asn Asp Asn Tyr Leu Val	
180 185 190	
atg gcc gag ctg cgc atc tat cag aac gcc aac gag ggc aag tgg ctg	624
Met Ala Glu Leu Arg Ile Tyr Gln Asn Ala Asn Glu Gly Lys Trp Leu	
195 200 205	
acc gcc aac agg gag ttc acc atc acg gta tac gcc att ggc acc ggc	672
Thr Ala Asn Arg Glu Phe Thr Ile Thr Val Tyr Ala Ile Gly Thr Gly	
210 215 220	
acg ctg ggc cag cac acc atg gag ccg ctg tcc tct gtg aac acc acc	720
Thr Leu Gly Gln His Thr Met Glu Pro Leu Ser Ser Val Asn Thr Thr	
225 230 235 240	
ggg gac tac gtg ggc tgg ttg gag ctc aac gtg acc gag ggc ctg cac	768
Gly Asp Tyr Val Gly Trp Leu Glu Leu Asn Val Thr Glu Gly Leu His	
245 250 255	
gag tgg ctg gtc aag tct aag gac aat cat ggc atc tac att gga gca	816
Glu Trp Leu Val Lys Ser Lys Asp Asn His Gly Ile Tyr Ile Gly Ala	
260 265 270	
cac gct gtc aac cga ccc gac cgc gag gtg aag ctg gac gac att gga	864
His Ala Val Asn Arg Pro Asp Arg Glu Val Lys Leu Asp Asp Ile Gly	
275 280 285	

ctg atc cac cgc aag gtg gac gac gag ttc cag ccc ttc atg atc ggc 912  
 Leu Ile His Arg Lys Val Asp Asp Glu Phe Gln Pro Phe Met Ile Gly  
 290 295 300

ttc ttc cgc gga ccg gag ctg atc aag gcg acg gcc cac agc agc cac 950  
 Phe Phe Arg Gly Pro Glu Leu Ile Lys Ala Thr Ala His Ser Ser His  
 305 310 315 320

cac agg agc aag cga agc gcc agc cat cca cgc aag cgc aag aag tgc 1008  
 His Arg Ser Lys Arg Ser Ala Ser His Pro Arg Lys Arg Lys Lys Ser  
 325 330 335

gtg tgc ccc aac aac gtg ccg ctg ctg gaa ccg atg gag agc acg cgc 1056  
 Val Ser Pro Asn Asn Val Pro Leu Leu Glu Pro Met Glu Ser Thr Arg  
 340 345 350

agc tgc cag atg cag acc ctg tac ata gac ttc aag gat ctg ggc tgg 1104  
 Ser Cys Gln Met Gln Thr Leu Tyr Ile Asp Phe Lys Asp Leu Gly Trp  
 355 360 365

cat gac tgg atc atc gca cca gag ggc tat ggc gcc ttc tac tgc agc 1152  
 His Asp Trp Ile Ile Ala Pro Glu Gly Tyr Gly Ala Phe Tyr Cys Ser  
 370 375 380

ggc gag tgc aat ttc ccg ctc aat gcg cac atg aac gcc acg aac cat 1200  
 Gly Glu Cys Asn Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His  
 385 390 395 400

gcg atc gtc cag acc ctg gtc cac ctg ctg gag ccc aag aag gtg ccc 1248  
 Ala Ile Val Gln Thr Leu Val His Leu Leu Glu Pro Lys Lys Val Pro  
 405 410 415

aag ccc tgc tgc gct ccg acc agg ctg gga gca cta ccc gtt ctg tac 1296  
 Lys Pro Cys Cys Ala Pro Thr Arg Leu Gly Ala Leu Pro Val Leu Tyr  
 420 425 430

cac ctg aac gac gag aat gtg aac ctg aaa aag tat aga aac atg att 1344  
 His Leu Asn Asp Glu Asn Val Asn Leu Lys Lys Tyr Arg Asn Met Ile  
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 450 455

<210> 24  
 <211> 455  
 <212> PRT  
 <213> *Drosophila melanogaster*

<400> 24  
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 20 25 30

Ala	Val	Glu	Ala	Thr	Gln	Ser	Gly	Ile	Tyr	Ile	Asp	Asn	Gly	Lys	Asp	35	40	45
Gln	Thr	Ile	Met	His	Arg	Val	Leu	Ser	Glu	Asp	Asp	Lys	Leu	Asp	Val	50	55	60
Ser	Tyr	Glu	Ile	Leu	Glu	Phe	Leu	Gly	Ile	Ala	Glu	Arg	Pro	Thr	His	55	70	75
Leu	Ser	Ser	His	Gln	Leu	Ser	Leu	Arg	Lys	Ser	Ala	Pro	Lys	Phe	Leu	85	90	95
Leu	Asp	Val	Tyr	His	Arg	Ile	Thr	Ala	Glu	Glu	Gly	Leu	Ser	Asp	Gln	100	105	110
Asp	Glu	Asp	Asp	Tyr	Glu	Arg	Gly	His	Arg	Ser	Arg	Arg	Ser	Ala		115	120	125
Asp	Leu	Glu	Glu	Asp	Glu	Gly	Glu	Gln	Gln	Lys	Asn	Phe	Ile	Thr	Asp	130	135	140
Leu	Asp	Lys	Arg	Ala	Ile	Asp	Glu	Ser	Asp	Ile	Ile	Met	Thr	Phe	Leu	145	150	155
Asn	Lys	Arg	His	His	Asn	Val	Asp	Glu	Leu	Arg	His	Glu	His	Gly	Arg	165	170	175
Arg	Leu	Trp	Phe	Asp	Val	Ser	Asn	Val	Pro	Asn	Asp	Asn	Tyr	Leu	Val	180	185	190
Met	Ala	Glu	Leu	Arg	Ile	Tyr	Gln	Asn	Ala	Asn	Glu	Gly	Lys	Trp	Leu	195	200	205
Thr	Ala	Asn	Arg	Glu	Phe	Thr	Ile	Thr	Val	Tyr	Ala	Ile	Gly	Thr	Gly	210	215	220
Thr	Leu	Gly	Gln	His	Thr	Met	Glu	Pro	Leu	Ser	Ser	Val	Asn	Thr	Thr	225	230	235
Gly	Asp	Tyr	Val	Gly	Trp	Leu	Glu	Leu	Asn	Val	Thr	Glu	Gly	Leu	His	245	250	255
Glu	Trp	Leu	Val	Lys	Ser	Lys	Asp	Asn	His	Gly	Ile	Tyr	Ile	Gly	Ala	260	265	270
His	Ala	Val	Asn	Arg	Pro	Asp	Arg	Glu	Val	Lys	Leu	Asp	Asp	Ile	Gly	275	280	285
Leu	Ile	His	Arg	Lys	Val	Asp	Asp	Glu	Phe	Gln	Pro	Phe	Met	Ile	Gly	290	295	300
Phe	Phe	Arg	Gly	Pro	Glu	Leu	Ile	Lys	Ala	Thr	Ala	His	Ser	Ser	His	305	310	315
His	Arg	Ser	Lys	Arg	Ser	Ala	Ser	His	Pro	Arg	Lys	Arg	Lys	Lys	Ser	325	330	335
Val	Ser	Pro	Asn	Asn	Val	Pro	Leu	Leu	Glu	Pro	Met	Glu	Ser	Thr	Arg	340	345	350
Ser	Cys	Gln	Met	Gln	Thr	Leu	Tyr	Ile	Asp	Phe	Lys	Asp	Leu	Gly	Trp	355	360	365
His	Asp	Trp	Ile	Ile	Ala	Pro	Glu	Gly	Tyr	Gly	Ala	Phe	Tyr	Cys	Ser	370	375	380
Gly	Glu	Cys	Asn	Phe	Pro	Leu	Asn	Ala	His	Met	Asn	Ala	Thr	Asn	His	385	390	395
Ala	Ile	Val	Gln	Thr	Leu	Val	His	Leu	Leu	Glu	Pro	Lys	Lys	Val	Pro	405	410	415
Lys	Pro	Cys	Cys	Ala	Pro	Thr	Arg	Leu	Gly	Ala	Leu	Pro	Val	Leu	Tyr	420	425	430
His	Leu	Asn	Asp	Glu	Asn	Val	Asn	Leu	Lys	Lys	Tyr	Arg	Asn	Met	Ile	435	440	445
Val	Lys	Ser	Cys	Gly	Cys	His										450	455	

1210> 25  
 1211> 1674  
 1212> DNA  
 1213> Mus musculus

1220>  
 1221> CDS  
 1222> (69)..(1268)

1400> 25

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cgatccggg cgctgtccca tccttgctcg cgaggcgctg ctggatgaga gtccgctaaa 50

cgatcgag atg gct gcg cgt ccg gga ctc cta tgg cta ctg ggc ctg gct 110
      Met Ala Ala Arg Pro Gly Leu Leu Trp Leu Leu Gly Leu Ala
        1             5             10

ctg tgc gtg ttg ggc ggc ggt cac ctc tgc cat ccc ccg cac gtc ttt 158
Leu Cys Val Leu Gly Gly Gly His Leu Ser His Pro Pro His Val Phe
  15             20             25             30

ccc cag cgt cga cta gga gta cgc gag ccc cgc gac atg cag cgc gag 206
Pro Gln Arg Arg Leu Gly Val Arg Glu Pro Arg Asp Met Gln Arg Glu
          35             40             45

att cgg gag gtg ctg ggg ctg ccg ggg cgg ccc cga tcc cga gca ccg 254
Ile Arg Glu Val Leu Gly Leu Pro Gly Arg Pro Arg Ser Arg Ala Pro
          50             55             60

gtc ggg gct gcc cag cag cca gcg tct gcg ccc ctc ttt atg ttg gac 302
Val Gly Ala Ala Gln Gln Pro Ala Ser Ala Pro Leu Phe Met Leu Asp
        65             70             75

ctg tac cgt gcc atg acg gat gac agt ggc ggt ggg acc ccg cag cct 350
Leu Tyr Arg Ala Met Thr Asp Asp Ser Gly Gly Gly Thr Pro Gln Pro
        80             85             90

cac ttg gac cgt gct gac ctg att atg agc ttt gtc aac ata gtg gaa 398
His Leu Asp Arg Ala Asp Leu Ile Met Ser Phe Val Asn Ile Val Glu
        95             100             105             110

cgc gac cgt acc ctg ggc tac cag gag cca cac tgg aag gaa ttc cac 446
Arg Asp Arg Thr Leu Gly Tyr Gln Glu Pro His Trp Lys Glu Phe His
          115             120             125

ttt gac cta acc cag atc cct gct ggg gag gct gtc aca gct gct gag 494
Phe Asp Leu Thr Gln Ile Pro Ala Gly Glu Ala Val Thr Ala Ala Glu
          130             135             140

ttc cgg atc tac aaa gaa ccc agt acc cac ccg ctc aac aca acc ttc 542
Phe Arg Ile Tyr Lys Glu Pro Ser Thr His Pro Leu Asn Thr Thr Phe
          145             150             155

cac atc agc atg ttc gaa gtg gtc caa gag cac tcc aac agg gag tct 590
His Ile Ser Met Phe Glu Val Val Gln Glu His Ser Asn Arg Glu Ser
        160             165             170

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gac ttg tcc ttt ttg gat ctt cag acg ctc cga tct ggg gac gag ggc	638
Asp Leu Ser Phe Leu Asp Leu Gln Thr Leu Arg Ser Gly Asp Glu Gly	
175 180 185 190	
tggtgtgtgtgacatcaca gca gcc agt gac cga tgg ctg ctg aac	686
Trp Leu Val Leu Asp Ile Thr Ala Ala Ser Asp Arg Trp Leu Leu Asn	
195 200 205	
cat cac aag gac cta gga ctc cgc ctc tat gtg gaa acc gag gat ggg	734
His His Lys Asp Leu Gly Leu Arg Leu Tyr Val Glu Thr Glu Asp Gly	
210 215 220	
cac ggc ata gat cct ggc cta gct ggt ctg ctt gga cga caa gca cca	782
His Gly Ile Asp Pro Gly Leu Ala Gly Leu Leu Gly Arg Gln Ala Pro	
225 230 235	
cgc tcc aga cag cct ttc atg gtt ggt ttc ttc agg gcc aac cag agt	830
Arg Ser Arg Gln Pro Phe Met Val Gly Phe Phe Arg Ala Asn Gln Ser	
240 245 250	
cct gtg cgg gcc cct cga aca gca aga cca ctg aag aag aag cag cta	878
Pro Val Arg Ala Pro Arg Thr Ala Arg Pro Leu Lys Lys Lys Gln Leu	
255 260 265 270	
aat caa atc aac cag ctg ccg cac tcc aac aaa cac cta gga atc ctt	926
Asn Gln Ile Asn Gln Leu Pro His Ser Asn Lys His Leu Gly Ile Leu	
275 280 285	
gat gat ggc cac ggt tct cac ggc aga gaa gtt tgc cgc aca ggt gag	974
Asp Asp Gly His Gly Ser His Gly Arg Glu Val Cys Arg Thr Gly Glu	
290 295 300	
ctc tat gtc agc ttc cgt gac ctt ggc tgg ctg gac tct gtc att gcc	1022
Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Leu Asp Ser Val Ile Ala	
305 310 315	
ccc cag ggc tac tcc gcc tat tac tgt gct ggg gag tgc atc tac cca	1070
Pro Gln Gly Tyr Ser Ala Tyr Tyr Cys Ala Gly Glu Cys Ile Tyr Pro	
320 325 330	
ctg aac tcc tgt atg aac tcc acc aac cac gcc act atg cag gcc ctg	1118
Leu Asn Ser Cys Met Asn Ser Thr Asn His Ala Thr Met Gln Ala Leu	
335 340 345 350	
gta cat ctg atg aag cca gat atc atc ccc aag gtg tgc tgt gtg cct	1166
Val His Leu Met Lys Pro Asp Ile Ile Pro Lys Val Cys Cys Val Pro	
355 360 365	
act gag ctg agt gcc att tct ctg ctc tac tat gat aga aac aat aat	1214
Thr Glu Leu Ser Ala Ile Ser Leu Leu Tyr Tyr Asp Arg Asn Asn Asn	
370 375 380	
gtc atc ctg cgc agg gag cgc aac atg gta gtc cag gcc tgt ggc tgc	1262
Val Ile Leu Arg Arg Glu Arg Asn Met Val Val Gln Ala Cys Gly Cys	
385 390 395	

cac tga gtcctgccc aacagcctgc tgccatccca tctatctagt caggcctctc 1318  
 His

400

ttccaaggca ggaaaccaac aaagagggaa ggcagtgcctt tcaactccat gtccacattc 1378

acagtcttgg ccctctctgt tctttttgcc aaggctgaga agatggtcct agttataacc 1438

ctggtgacct cagtagcccg atctctcadc tccccaaact ccccaatgca gccaggggca 1498

tctatgtcct ttgggattgg gcacagaagt ccaatttacc aacttattca tgagtcacta 1558

ctgggcccagc ctggacttga acctggaaca cagggtagag ctcaggtctct tcagtatcca 1618

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<210> 26

<211> 399

<212> PRT

<213> Mus musculus

<400> 26

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Val	Leu	Gly	Gly	Gly	His	Leu	Ser	His	Pro	Pro	His	Val	Phe	Pro	Gln
		20						25					30		
Arg	Arg	Leu	Gly	Val	Arg	Glu	Pro	Arg	Asp	Met	Gln	Arg	Glu	Ile	Arg
		35					40					45			
Glu	Val	Leu	Gly	Leu	Pro	Gly	Arg	Pro	Arg	Ser	Arg	Ala	Pro	Val	Gly
		50				55					60				
Ala	Ala	Gln	Gln	Pro	Ala	Ser	Ala	Pro	Leu	Phe	Met	Leu	Asp	Leu	Tyr
		65			70					75				80	
Arg	Ala	Met	Thr	Asp	Asp	Ser	Gly	Gly	Gly	Thr	Pro	Gln	Pro	His	Leu
			85					90						95	
Asp	Arg	Ala	Asp	Leu	Ile	Met	Ser	Phe	Val	Asn	Ile	Val	Glu	Arg	Asp
		100						105					110		
Arg	Thr	Leu	Gly	Tyr	Gln	Glu	Pro	His	Trp	Lys	Glu	Phe	His	Phe	Asp
		115					120					125			
Leu	Thr	Gln	Ile	Pro	Ala	Gly	Glu	Ala	Val	Thr	Ala	Ala	Glu	Phe	Arg
		130				135					140				
Ile	Tyr	Lys	Glu	Pro	Ser	Thr	His	Pro	Leu	Asn	Thr	Thr	Phe	His	Ile
		145			150					155				160	
Ser	Met	Phe	Glu	Val	Val	Gln	Glu	His	Ser	Asn	Arg	Glu	Ser	Asp	Leu
			165					170						175	
Ser	Phe	Leu	Asp	Leu	Gln	Thr	Leu	Arg	Ser	Gly	Asp	Glu	Gly	Trp	Leu
		180						185					190		
Val	Leu	Asp	Ile	Thr	Ala	Ala	Ser	Asp	Arg	Trp	Leu	Leu	Asn	His	His
		195					200					205			
Lys	Asp	Leu	Gly	Leu	Arg	Leu	Tyr	Val	Glu	Thr	Glu	Asp	Gly	His	Gly
	210					215					220				
Ile	Asp	Pro	Gly	Leu	Ala	Gly	Leu	Leu	Gly	Arg	Gln	Ala	Pro	Arg	Ser
	225				230					235				240	
Arg	Gln	Pro	Phe	Met	Val	Gly	Phe	Phe	Arg	Ala	Asn	Gln	Ser	Pro	Val
			245						250					255	

Arg Ala Pro Arg Thr Ala Arg Pro Leu Lys Lys Lys Gln Leu Asn Gln  
 260 265 270  
 Ile Asn Gln Leu Pro His Ser Asn Lys His Leu Gly Ile Leu Asp Asp  
 275 280 285  
 Gly His Gly Ser His Gly Arg Glu Val Cys Arg Thr Gly Glu Leu Tyr  
 290 295 300  
 Val Ser Phe Arg Asp Leu Gly Trp Leu Asp Ser Val Ile Ala Pro Gln  
 305 310 315 320  
 Gly Tyr Ser Ala Tyr Tyr Cys Ala Gly Glu Cys Ile Tyr Pro Leu Asn  
 325 330 335  
  
 Ser Cys Met Asn Ser Thr Asn His Ala Thr Met Gln Ala Leu Val His  
 340 345 350  
 Leu Met Lys Pro Asp Ile Ile Pro Lys Val Cys Cys Val Pro Thr Glu  
 355 360 365  
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 370 375 380  
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 385 390 395

<210> 27  
 <211> 104  
 <212> PRT  
 <213> Homo sapiens

<400> 27  
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 Glu Trp Ile Ile Ser Pro Lys Ser Phe Asp Ala Tyr Tyr Cys Ser Gly  
 20 25 30  
  
 Ala Cys Gln Phe Pro Met Pro Lys Ser Leu Lys Pro Ser Asn His Ala  
 35 40 45  
  
 Thr Ile Gln Ser Ile Val Ala Arg Ala Val Gly Val Val Pro Gly Ile  
 50 55 60  
  
 Pro Glu Pro Cys Cys Val Pro Glu Lys Met Ser Ser Leu Ser Ile Leu  
 65 70 75 80  
  
 Phe Phe Asp Glu Asn Lys Asn Val Val Leu Lys Val Tyr Pro Asn Met  
 85 90 95  
  
 Thr Val Glu Ser Cys Ala Cys Arg  
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<210> 28  
 <211> 102  
 <212> PRT  
 <213> Homo sapiens

<400> 28

Cys Lys Lys His Glu Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Gln  
1 5 10 15

Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala Ala Phe Tyr Cys Asp Gly  
20 25 30

Glu Cys Ser Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His Ala  
35 40 45

Ile Val Gln Thr Leu Val His Leu Met Phe Pro Asp His Val Pro Lys  
50 55 60

Pro Cys Cys Ala Pro Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe  
65 70 75 80

Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val  
85 90 95

Arg Ser Cys Gly Cys His  
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<210> 29

<211> 102

<212> PRT

<213> Homo sapiens

<400> 29

Cys Arg Lys His Glu Leu Tyr Val Ser Phe Gln Asp Leu Gly Trp Gln  
1 5 10 15

Asp Trp Ile Ile Ala Pro Lys Gly Tyr Ala Ala Asn Tyr Cys Asp Gly  
20 25 30

Glu Cys Ser Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His Ala  
35 40 45

Ile Val Gln Thr Leu Val His Leu Met Asn Pro Glu Tyr Val Pro Lys  
50 55 60

Pro Cys Cys Ala Pro Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe  
65 70 75 80

Asp Asp Asn Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val  
85 90 95

Arg Ala Cys Gly Cys His  
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<210> 30

<211> 1247

<212> DNA

<213> Homo sapiens



0220>  
 0221> CDS  
 0222> (84)..(1199)

0400> 30

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tatgttcata gcttgggagg aag atg cca ccg ccg cag caa ggt ccc tgc ggc 113
          Met Pro Pro Pro Gln Gln Gly Pro Cys Gly
              1              5              10

cac cac ctc ctc ctc ctc ctg gcc ctg ctg ctg ccc tcg ctg ccc ctg 161
His His Leu Leu Leu Leu Leu Ala Leu Leu Leu Pro Ser Leu Pro Leu
              15              20              25

acc cgc gcc ccc gtg ccc cca gcc cca gcc gcc gcc ctg ctc cag gct 209
Thr Arg Ala Pro Val Pro Pro Gly Pro Ala Ala Ala Leu Leu Gln Ala
              30              35              40

cta gga ctg cgc gat gag ccc cag ggt gcc ccc agg ctc cgg ccg gtt 257
Leu Gly Leu Arg Asp Glu Pro Gln Gly Ala Pro Arg Leu Arg Pro Val
              45              50              55

ccc ccg gtc atg tgg cgc ctg ttt cga cgc cgg gac ccc cag gag acc 305
Pro Pro Val Met Trp Arg Leu Phe Arg Arg Arg Asp Pro Gln Glu Thr
              60              65              70

agg tct ggc tcg cgg cgg acg tcc cca ggg gtc acc ctg caa ccg tgc 353
Arg Ser Gly Ser Arg Arg Thr Ser Pro Gly Val Thr Leu Gln Pro Cys
              75              80              85              90

cac gtg gag gag ctg ggg gtc gcc gga aac atc gtg cgc cac atc ccg 401
His Val Glu Glu Leu Gly Val Ala Gly Asn Ile Val Arg His Ile Pro
              95              100              105

gac cgc ggt gcg ccc acc cgg gcc tcg gag cct gtc tcg gcc gcg ggg 449
Asp Arg Gly Ala Pro Thr Arg Ala Ser Glu Pro Val Ser Ala Ala Gly
              110              115              120

cat tgc cct gag tgg aca gtc gtc ttc gac ctg tcg gct gtg gaa ccc 497
His Cys Pro Glu Trp Thr Val Val Phe Asp Leu Ser Ala Val Glu Pro
              125              130              135

gct gag cgc ccg agc cgg gcc cgc ctg gag ctg cgt ttc gcg gcg gcg 545
Ala Glu Arg Pro Ser Arg Ala Arg Leu Glu Leu Arg Phe Ala Ala Ala
              140              145              150

gcg gcg gca gcc ccg gag ggc ggc tgg gag ctg agc gtg gcg caa gcg 593
Ala Ala Ala Ala Pro Glu Gly Gly Trp Glu Leu Ser Val Ala Gln Ala
              155              160              165              170

ggc cag gcc gcg ggc gcg gac ccc ggg ccg gtg ctg ctc cgc cag ttg 641
Gly Gln Gly Ala Gly Ala Asp Pro Gly Pro Val Leu Leu Arg Gln Leu
              175              180              185
  
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gtg ccc gcc ctg ggg ccg cca gtg cgc gcg gag ctg ctg ggc gcc gct	689
Val Pro Ala Leu Gly Pro Pro Val Arg Ala Glu Leu Leu Gly Ala Ala	
190 195 200	
tggt gct cgc aac gcc tca tgg ccg cgc agc ctc cgc ctg gcg ctg gcg	737
Trp Ala Arg Asn Ala Ser Trp Pro Arg Ser Leu Arg Leu Ala Leu Ala	
205 210 215	
cta cgc ccc cgg gcc cct gcc gcc tgc gcg cgc ctg gcc gag gcc tgc	785
Leu Arg Pro Arg Ala Pro Ala Ala Cys Ala Arg Leu Ala Glu Ala Ser	
220 225 230	
ctg ctg ctg gtg acc ctc gac ccg cgc ctg tgc cac ccc ctg gcc cgg	833
Leu Leu Leu Val Thr Leu Asp Pro Arg Leu Cys His Pro Leu Ala Arg	
235 240 245 250	
ccg cgg cgc gac gcc gaa ccc gtg ttg ggc ggc ggc ccc ggg ggc gct	881
Pro Arg Arg Asp Ala Glu Pro Val Leu Gly Gly Gly Pro Gly Gly Ala	
255 260 265	
tgt cgc gcg cgg cgg ctg tac gtg agc ttc cgc gag gtg ggc tgg cac	929
Cys Arg Ala Arg Arg Leu Tyr Val Ser Phe Arg Glu Val Gly Trp His	
270 275 280	
cgc tgg gtc atc gcg ccg cgc ggc ttc ctg gcc aac tac tgc cag ggt	977
Arg Trp Val Ile Ala Pro Arg Gly Phe Leu Ala Asn Tyr Cys Gln Gly	
285 290 295	
cag tgc gcg ctg ccc gtc gcg ctg tgc ggg tcc ggg ggg ccg ccg gcg	1025
Gln Cys Ala Leu Pro Val Ala Leu Ser Gly Ser Gly Gly Pro Pro Ala	
300 305 310	
ctc aac cac gct gtg ctg cgc gcg ctc atg cac gcg gcc gcc ccg gga	1073
Leu Asn His Ala Val Leu Arg Ala Leu Met His Ala Ala Ala Pro Gly	
315 320 325 330	
gcc gcc gac ctg ccc tgc tgc gtg ccc gcg cgc ctg tgc ccc atc tcc	1121
Ala Ala Asp Leu Pro Cys Cys Val Pro Ala Arg Leu Ser Pro Ile Ser	
335 340 345	
gtg ctc ttc ttt gac aac agc gac aac gtg gtg ctg cgg cag tat gag	1169
Val Leu Phe Phe Asp Asn Ser Asp Asn Val Val Leu Arg Gln Tyr Glu	
350 355 360	
gac atg gtg gtg gac gag tgc ggc tgc cgc taacccgggg cgggcaggga	1219
Asp Met Val Val Asp Glu Cys Gly Cys Arg	
365 370	
cccgggccca acaataaatg ccgcgtgg	1247

<210> 31

<211> 372

<212> PRT

<213> Homo sapiens

<400> 31

Met Pro Pro Pro Gln Gln Gly Pro Cys Gly His His Leu Leu Leu Leu  
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20 25 30

Pro Gly Pro Ala Ala Ala Leu Leu Gln Ala Leu Gly Leu Arg Asp Glu  
35 40 45

Pro Gln Gly Ala Pro Arg Leu Arg Pro Val Pro Pro Val Met Trp Arg  
50 55 60

Leu Phe Arg Arg Arg Asp Pro Gln Glu Thr Arg Ser Gly Ser Arg Arg  
65 70 75 80

Thr Ser Pro Gly Val Thr Leu Gln Pro Cys His Val Glu Glu Leu Gly  
85 90 95

Val Ala Gly Asn Ile Val Arg His Ile Pro Asp Arg Gly Ala Pro Thr  
100 105 110

Arg Ala Ser Glu Pro Val Ser Ala Ala Gly His Cys Pro Glu Trp Thr  
115 120 125

Val Val Phe Asp Leu Ser Ala Val Glu Pro Ala Glu Arg Pro Ser Arg  
130 135 140

Ala Arg Leu Glu Leu Arg Phe Ala Ala Ala Ala Ala Ala Ala Pro Glu  
145 150 155 160

Gly Gly Trp Glu Leu Ser Val Ala Gln Ala Gly Gln Gly Ala Gly Ala  
165 170 175

Asp Pro Gly Pro Val Leu Leu Arg Gln Leu Val Pro Ala Leu Gly Pro  
180 185 190

Pro Val Arg Ala Glu Leu Leu Gly Ala Ala Trp Ala Arg Asn Ala Ser  
195 200 205

Trp Pro Arg Ser Leu Arg Leu Ala Leu Ala Leu Arg Pro Arg Ala Pro  
210 215 220

Ala Ala Cys Ala Arg Leu Ala Glu Ala Ser Leu Leu Leu Val Thr Leu  
225 230 235 240

Asp Pro Arg Leu Cys His Pro Leu Ala Arg Pro Arg Arg Asp Ala Glu  
245 250 255

Pro Val Leu Gly Gly Gly Pro Gly Gly Ala Cys Arg Ala Arg Arg Leu  
260 265 270

Tyr Val Ser Phe Arg Glu Val Gly Trp His Arg Trp Val Ile Ala Pro  
275 280 285

Arg Gly Phe Leu Ala Asn Tyr Cys Gln Gly Gln Cys Ala Leu Pro Val  
290 295 300

Ala Leu Ser Gly Ser Gly Gly Pro Pro Ala Leu Asn His Ala Val Leu  
305 310 315 320

Arg Ala Leu Met His Ala Ala Ala Pro Gly Ala Ala Asp Leu Pro Cys  
325 330 335

Cys Val Pro Ala Arg Leu Ser Pro Ile Ser Val Leu Phe Phe Asp Asn  
340 345 350

Ser Asp Asn Val Val Leu Arg Gln Tyr Glu Asp Met Val Val Asp Glu  
355 360 365

Cys Gly Cys Arg  
370



Creation date: 09-05-2003  
Indexing Officer: KHALL - KIM HALL  
Team: OIPEBackFileIndexing  
Dossier: 09331375

Legal Date: 07-30-2001

No.	Doccode	Number of pages
1	CRFL	6

Total number of pages: 6

Remarks:

Order of re-scan issued on .....